Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

South Grand River

Water Body Segment at a Glance:

Counties: Cass/Henry
Nearby City: Clinton
Length of impaired segment: 62.5 miles
Pollutant: Bacteria
Source: Rural Nonpoint Source
Water Body ID: 1249


State Map Showing Location of Watershed

Scheduled for TMDL development: 2013

Description of the Problem

Beneficial uses of South Grand River

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation – Category B
- Secondary Contact Recreation

Use that is impaired

- Whole Body Contact Recreation – Category B

Standards that apply

- Missouri's Water Quality Standards at 10 CSR 20-7.031(4)(C) state that the *E.coli* bacteria count shall not exceed 126 colonies per 100 milliliters of water (126 col/100 mL) for Category A and 206 col/100 mL for Category B waters. This count is the geometric mean during the recreational season (April 1- October 31) in waters designated for whole body contact recreation.

Background information and water quality data

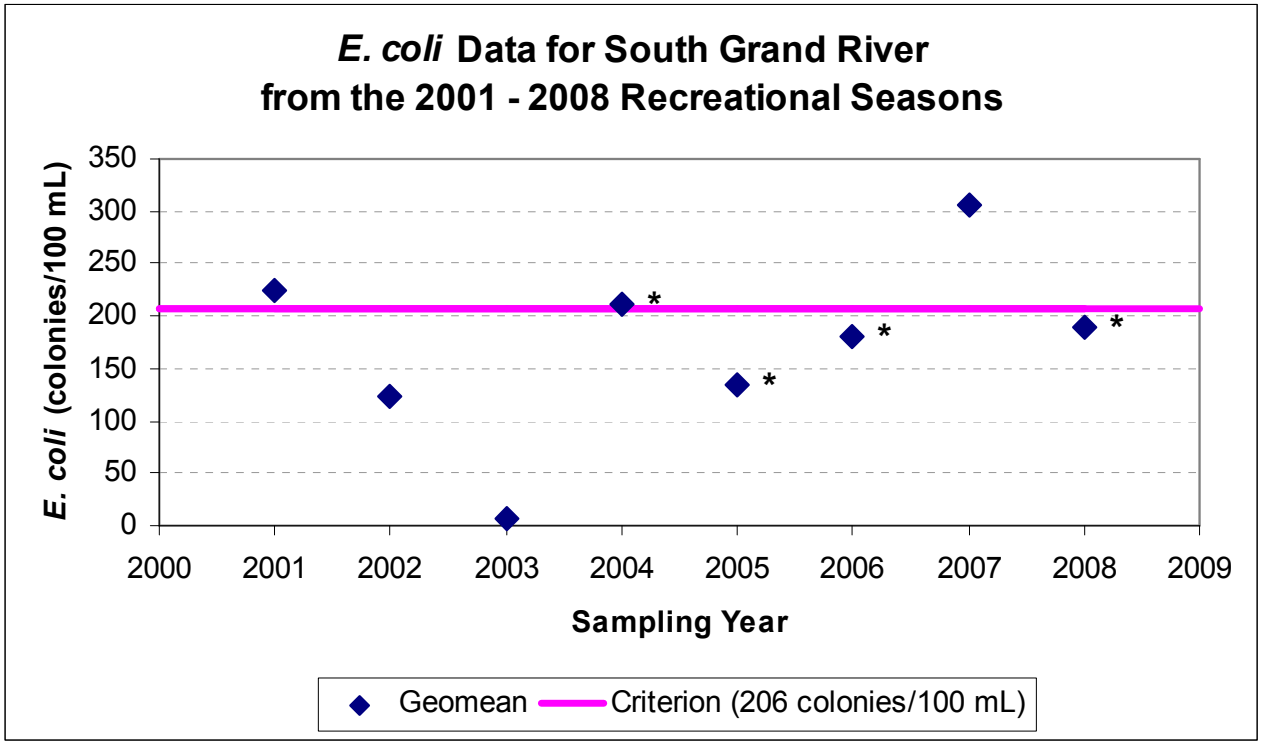
The South Grand River flows southeast to Truman Lake in western Missouri. It is designated as Category B for the whole body contact recreation use, which means it has places deep enough for total immersion (i.e., swimming), but they may be on private lands or inaccessible to the public.

Excessive amounts of fecal bacteria in surface water used for recreation are an indication of an increased risk of pathogen-induced illness to humans. Infections due to pathogen-contaminated

waters include gastrointestinal, respiratory, eye, ear, nose, throat and skin diseases. *E. coli*, are bacteria found in the intestines of warm blooded animals and are used as indicators of the risk of waterborne disease from pathogenic (disease causing) bacteria or viruses. Most *E. coli* strains are harmless, but some can cause serious illness in humans and are occasionally responsible for product recalls. The harmless strains are part of the normal flora of the intestines, and can benefit their hosts by preventing the establishment of pathogenic bacteria within the intestine[1,2]. Missouri's bacteria criteria are based on specific levels of risk of acute gastrointestinal illness. The levels of risk correlating to these criteria are no more than eight illnesses per 1,000 swimmers in fresh water.

The impairment for the South Grand River is based on data collected by the U.S. Geological Survey from 2001-2008. The *E. coli* criterion of 206 col/100 mL for Category B waters is interpreted as the geometric mean of at least five samples collected during the recreational season (April 1 through October 31) of any of the last three years for which data are available. This criterion was exceeded in South Grand River in 2007. The source of the bacteria is not known.

People can protect themselves from waterborne illness by avoiding contact with contaminated water. However, when swimming anywhere, it is wise to take common sense precautions. These include washing hands before eating, showering after swimming and avoiding exposure to questionable water if you have open cuts or wounds.

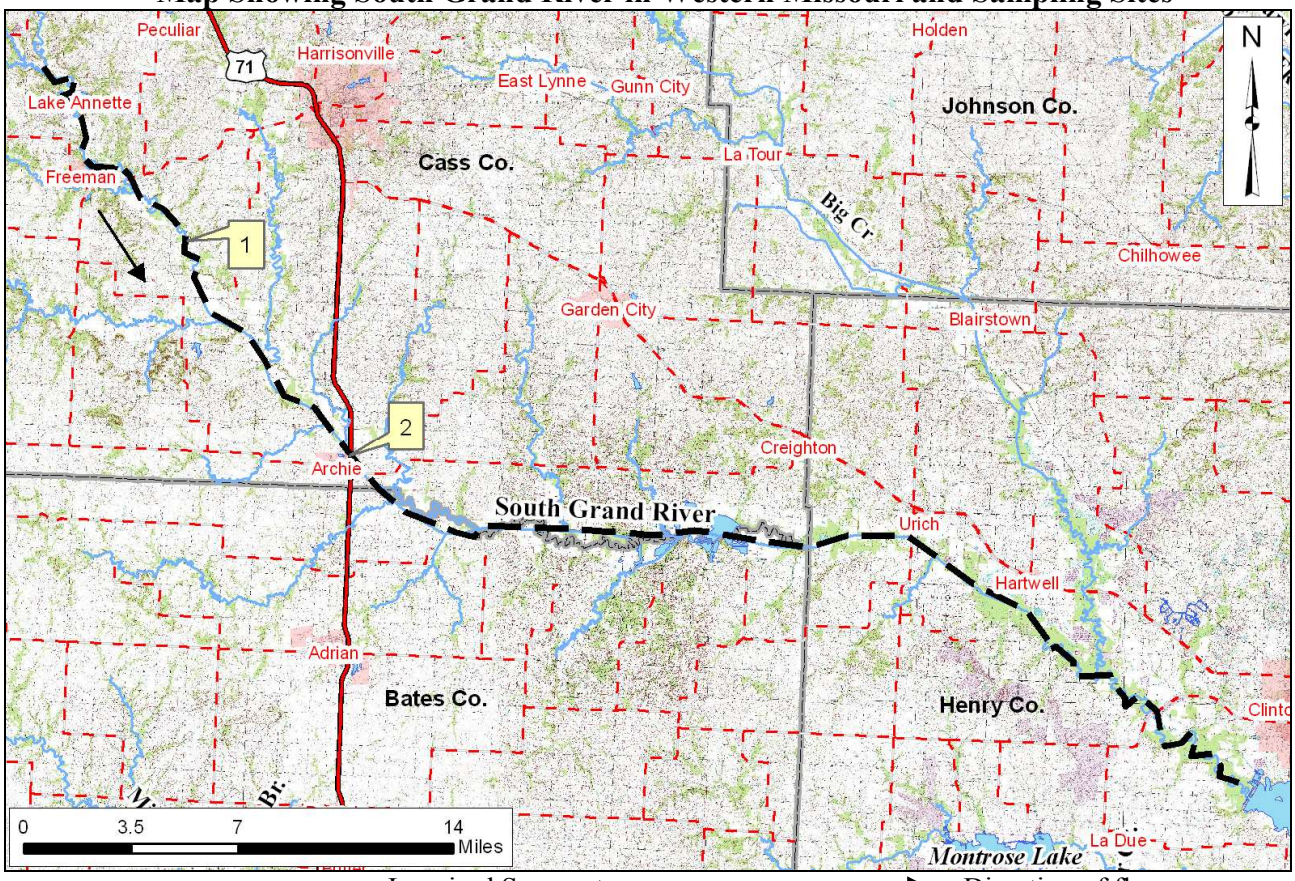


* Geomean calculated using fewer than five (5) samples.

[1] Hudault S, Guignot J, Servin AL (July 2001). "*Escherichia coli* strains colonising the gastrointestinal tract protect germfree mice against *Salmonella typhimurium* infection". *Gut* **49** (1): 47–55

[2] Reid G, Howard J, Gan BS (September 2001). "Can bacterial interference prevent infection?". *Trends Microbiol.* **9** (9): 424–8.

Map Showing South Grand River in Western Missouri and Sampling Sites



Sample Sites
1 – S. Grand River at Grand River Church
2 – S. Grand River near Archie

For more information call or write:
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or 573-751-1300 office
573-522-9920 fax
Program Home Page: www.dnr.mo.gov/env/wpp/index.html